

Please check that this question paper contains 09 questions and 02 printed pages within first ten minutes.

EVENING

[Total No. of Questions: 09]

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27 JUN 2022

Uni. Roll No.

Program: B.Tech. CSE (Batch 2018 onward)

Semester: 6th

Name of Subject: Computer Graphics

Subject Code: PCCS-113

Paper ID: 17189

Max. Marks: 60

Time Allowed: 03 Hours

NOTE:

- 1) Parts A and B are compulsory
- 2) Part-C has Two Questions Q8 and Q9. Both are compulsory, but with internal choice
- 3) Any missing data may be assumed appropriately

Part – A

[Marks: 02 each]

Q1.

- a) Why does parallel railway track appear to converge at horizon?
- b) How ray tracing is useful in computer graphics?
- c) Define the term anti-aliasing?
- d) Compare parallel and perspective projection?
- e) Estimate the magnification of a triangle with vertices A (0, 0), B (1, 1) and C (5, 2) to twice its size while keeping C (5, 2) fixed.
- f) Design 2D viewing pipeline.

Part – B

[Marks: 04 each]

- Q2. Identify the side effects of scan conversion and how they can be eliminated?
- Q3. Suppose RGB raster system is to be designed using on 6 inch by 10 inch screen with a resolution of 200 pixels per inch in each direction. If we want to store 8 bits per pixel in the frame buffer, how much storage (in bytes) do we need for frame buffer? Also find the aspect ratio of the raster system?
- Q4. Make use of Cohen Sutherland algorithm to clip a line AB where A (70, 20) and B (100, 10) against a clip window whose lower left corner is (50, 10) and upper right corner is (80, 40).
- Q5. Determine the major differences between boundary fill and flood fill algorithm.

- Q6. Explain the working and components of refresh type CRT with labeled diagram.
- Q7. Formulate reflection on a unit cube about xy plane.

Part – C

[Marks: 12 each]

- Q8. Illustrate Sutherland-Hodgeman polygon clipping algorithm with the help of an example. Outline its major shortcomings.

OR

How can we classify the visible surface detection algorithms? Demonstrate Z buffer algorithm? Compare it with other methods for visible surface detection.

- Q9. Discuss Bresenham's Line drawing Algorithm. "The Bresenham's Line drawing Algorithm considered as the most efficient algorithm when compared to DDA algorithm", state the reason. Use this algorithm to rasterize a line with endpoints (20, 10) to (30, 18).

OR

- Examine in detail Mid-Point circle drawing algorithm. Predict the circle coordinates by taking centre at origin and radius 6 by using this method.
